GDML Progress

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January 26, 2011

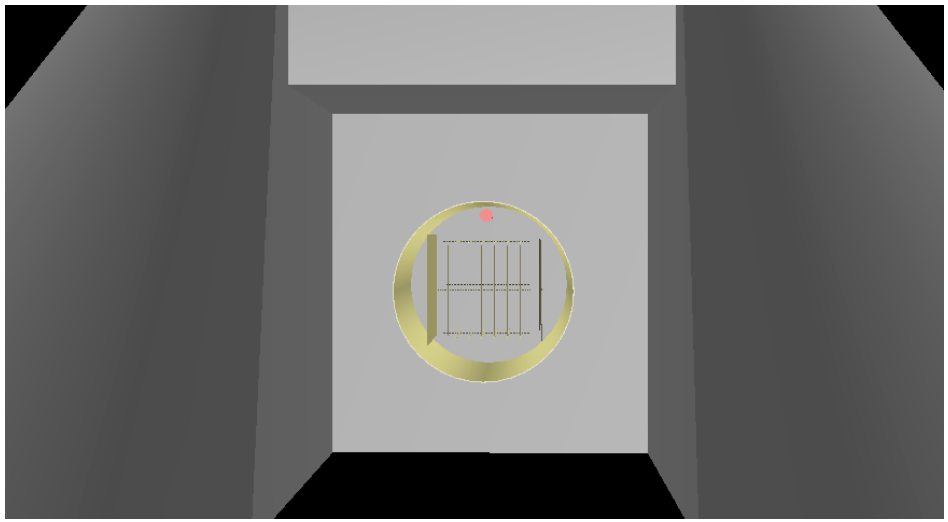
μBooNE Geometry

- This week, adding earth overbearing and ground, pending details from Dixon
- Still having issues adding volumes, working with Brian, Eric and Ben
- GENIE SEGFAULT still present when PMT or any other volumes added to cryostat volume
- New test run moving Test volume between different layers (more on next slides)

μBooNE Segmentation Fault (running GENIE)

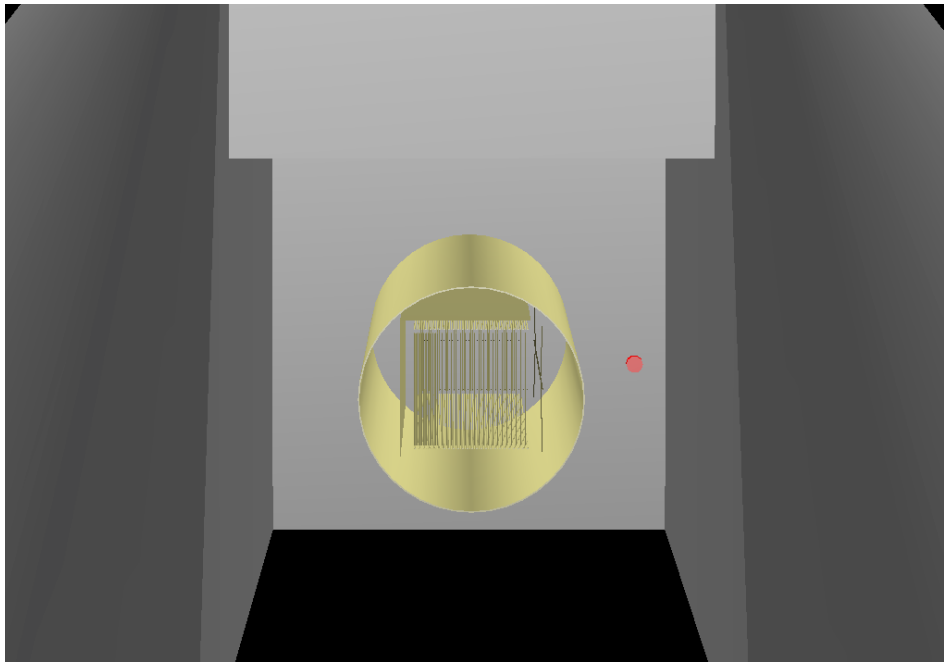

```
> 1292371527 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (281)> : *** Decay forbidden by kinematics!
***
> 1292371527 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (282)> : sum{mass} = 1.82202, W = 1.77881
> 1292371527 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (283)> : Discarding hadronic system & re-
trying!
> 1292371529 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (281)> : *** Decay forbidden by kinematics!
***
> 1292371529 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (282)> : sum{mass} = 1.82254, W = 1.65347
> 1292371529 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (283)> : Discarding hadronic system & re-
trying!
> 1292371544 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (281)> : *** Decay forbidden by kinematics!
***
> 1292371544 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (282)> : sum{mass} = 1.82254, W = 1.29712
> 1292371544 WARN KNOHad : [n] <KNOHadronization.cxx::SelectParticles (283)> : Discarding hadronic system & re-
trying!
> 1292371559 WARN RESKinematics : [n] <RESKinematicsGenerator.cxx::ProcessEventRecord (97)> : No available phase
space
> 1292371559 WARN GEVGDriver : [n] <GEVGDriver.cxx::GenerateEvent (327)> : I generated an unphysical event!
> 1292371559 WARN GEVGDriver : [n] <GEVGDriver.cxx::GenerateEvent (341)> : I am filtering out the current event!
> 1292371559 WARN GEVGDriver : [n] <GEVGDriver.cxx::GenerateEvent (347)> : Attempting to regenerate the event.
```

μBooNE Geometry Volume Test



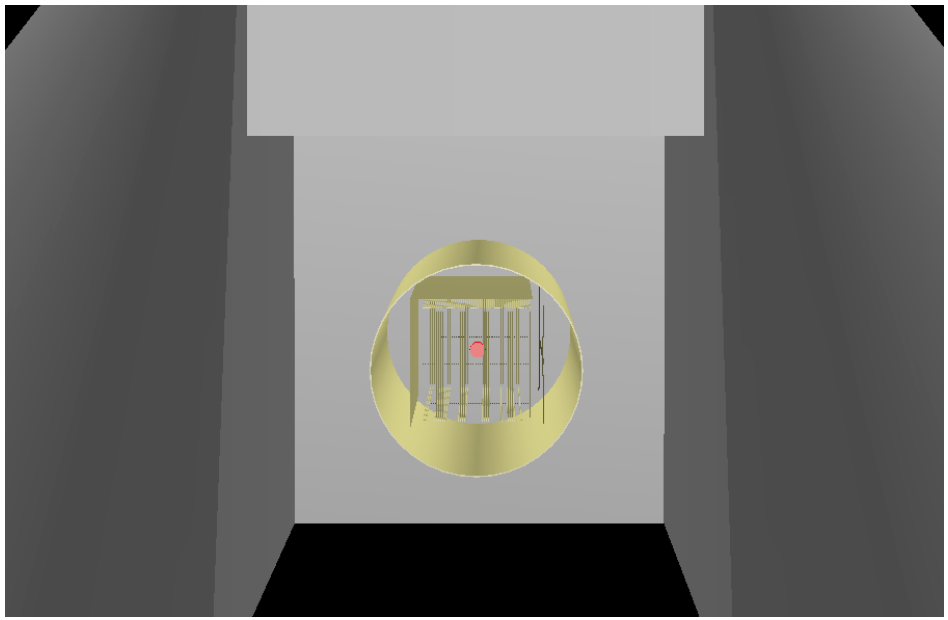
same errors and segmentation fault

μBooNE Geometry Volume Test



no GEVG errors, runs through whole set of events in GENIE (200)

μBooNE Geometry Volume Test



very strange result: has different segmentation fault, not during event production, but when run in gdb, there are no errors...

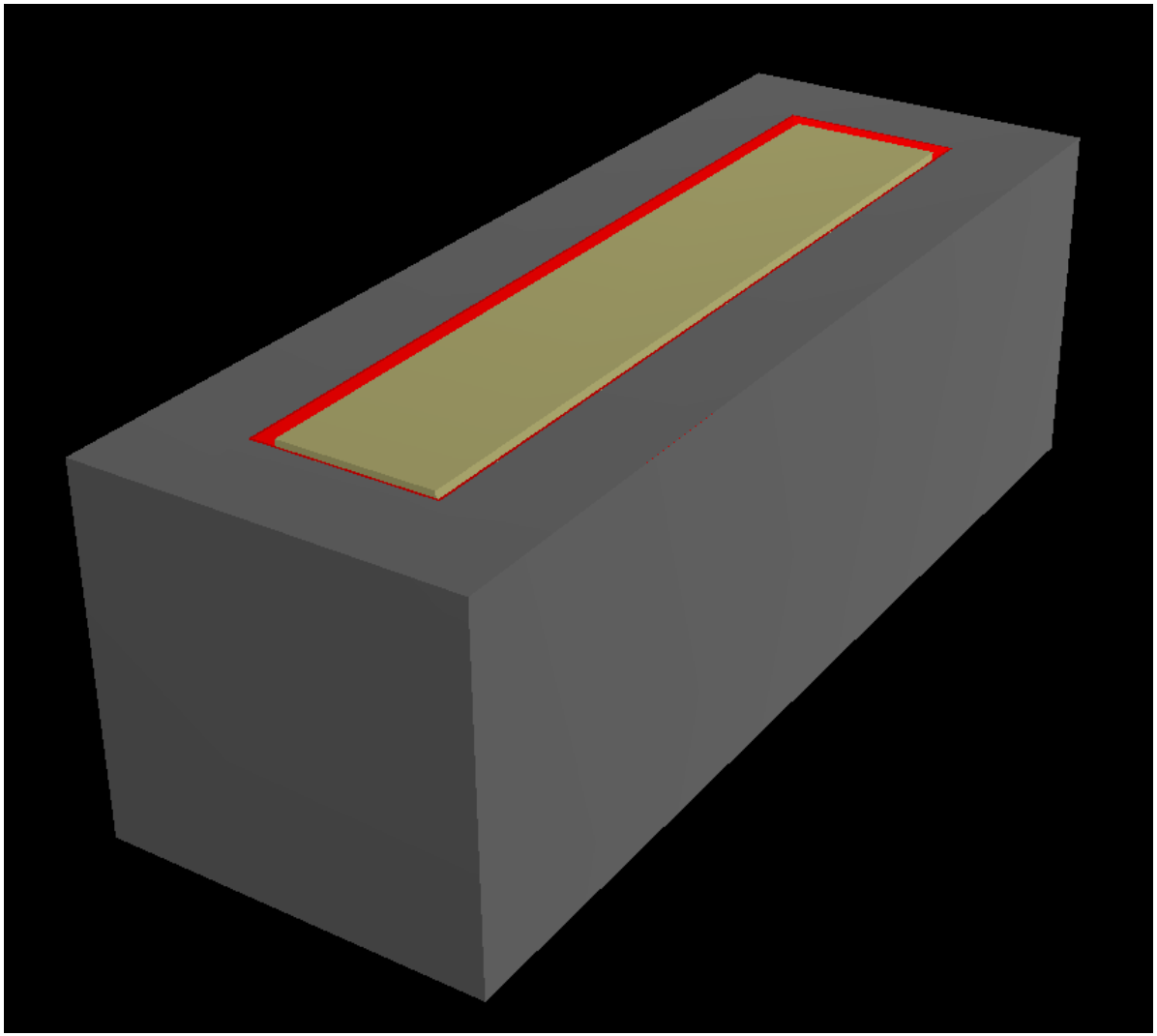
μBooNE Geometry Volume Test New Errors


```
Begin processing the 9th record. Run 1, Event 9, LumiSection 1 at 25-Jan-2011 17:41:39 CST
Begin processing the 10th record. Run 1, Event 10, LumiSection 1 at 25-Jan-2011 17:41:39 CST
Begin processing the 11th record. Run 1, Event 11, LumiSection 1 at 25-Jan-2011 17:41:39 CST
%MSG-e Root_Error:  GENIEGen:geniegen TUnixSystem::DispatchSignals()  25-Jan-2011 17:41:39 CST  Run: 1 Event: 11
segmentation violation
%MSG
(no debugging symbols found)
Attaching to program: /proc/5325/exe, process 5325
[Thread debugging using libthread_db enabled]
[New Thread 0x2abbb1a483c0 (LWP 5325)]
0x00000038a1699fc5 in waitpid () from /lib64/libc.so.6
#1  0x00000038a163c331 in do_system () from /lib64/libc.so.6
#2  0x00002abbad58b53f in TUnixSystem::Exec (this=0x72f2920,
    at unix/src/TUnixSystem.cxx:1879
#3  0x00002abbad58aa63 in TUnixSystem::StackTrace (this=0x72f2920)
    at unix/src/TUnixSystem.cxx:2067
#4  0x00002abbad58d96f in TUnixSystem::DispatchSignals (this=0x72f2920,
    sig=kSigSegmentationViolation) at unix/src/TUnixSystem.cxx:1027
#5  0x00002abbad58da93 in SigHandler (sig=kSigSegmentationViolation)
    at unix/src/TUnixSystem.cxx:351
#6  0x00002abbad58442f in sighandler (sig=11) at unix/src/TUnixSystem.cxx:3290
#7  <signal handler called>
#8  0x00002abbb7daa937 in TGeoVoxelFinder::GetValidExtra (this=0x868bea0,
    array1=0x868c0d0 ">", '"' <repeats 24 times>, "\002\036",
    array2=0x4899caae <Address 0x4899caae out of bounds>, list=0x840b2c8,
    ncheck=@0x7fff28cc5bcc) at geom/src/TGeoVoxelFinder.cxx:605
#9  0x00002abbb7db278f in TGeoVoxelFinder::GetNextCandidates (this=0x868bea0,
    point=0x7fff28cc5d80, ncheck=@0x7fff28cc5bcc)
    at geom/src/TGeoVoxelFinder.cxx:1124
#10 0x00002abbb7daabea in TGeoVoxelFinder::GetNextVoxel (this=0x868bea0,
    point=0x7fff28cc5d80, ncheck=@0x7fff28cc5bcc)
    at geom/src/TGeoVoxelFinder.cxx:1442
#11 0x00002abbb7d33370 in TGeoNavigator::FindNextDaughterBoundary (
    this=0x8430e80, point=0x7fff28cc5d80, dir=0x7fff28cc5d60,
    idaughter=@0x7fff28cc5d5c, compmatrix=false)
    at geom/src/TGeoNavigator.cxx:901
#12 0x00002abbb7d38dbc in TGeoNavigator::FindNextBoundary (this=0x8430e80,
    stepmax=1e+30, path=0x2abbcf4e8831 "", frombdr=false)
    at geom/src/TGeoNavigator.cxx:613
#13 0x00002abbb7d13de9 in TGeoManager::FindNextBoundary (this=0x861b450,
    stepmax=1e+30, path=0x2abbcf4e8831 "", frombdr=false)
    at geom/src/TGeoManager.cxx:2306
#14 0x00002abbcf4cc5de in genie::geometry::ROOTGeomAnalyzer::StepToNextBoundary
    ()
   from /grid/fermiapp/uboone/code/externals-1.1.0/genie/v2_6_0/Linux64bit-2-6-2-5/lib/libGGeo.so
```

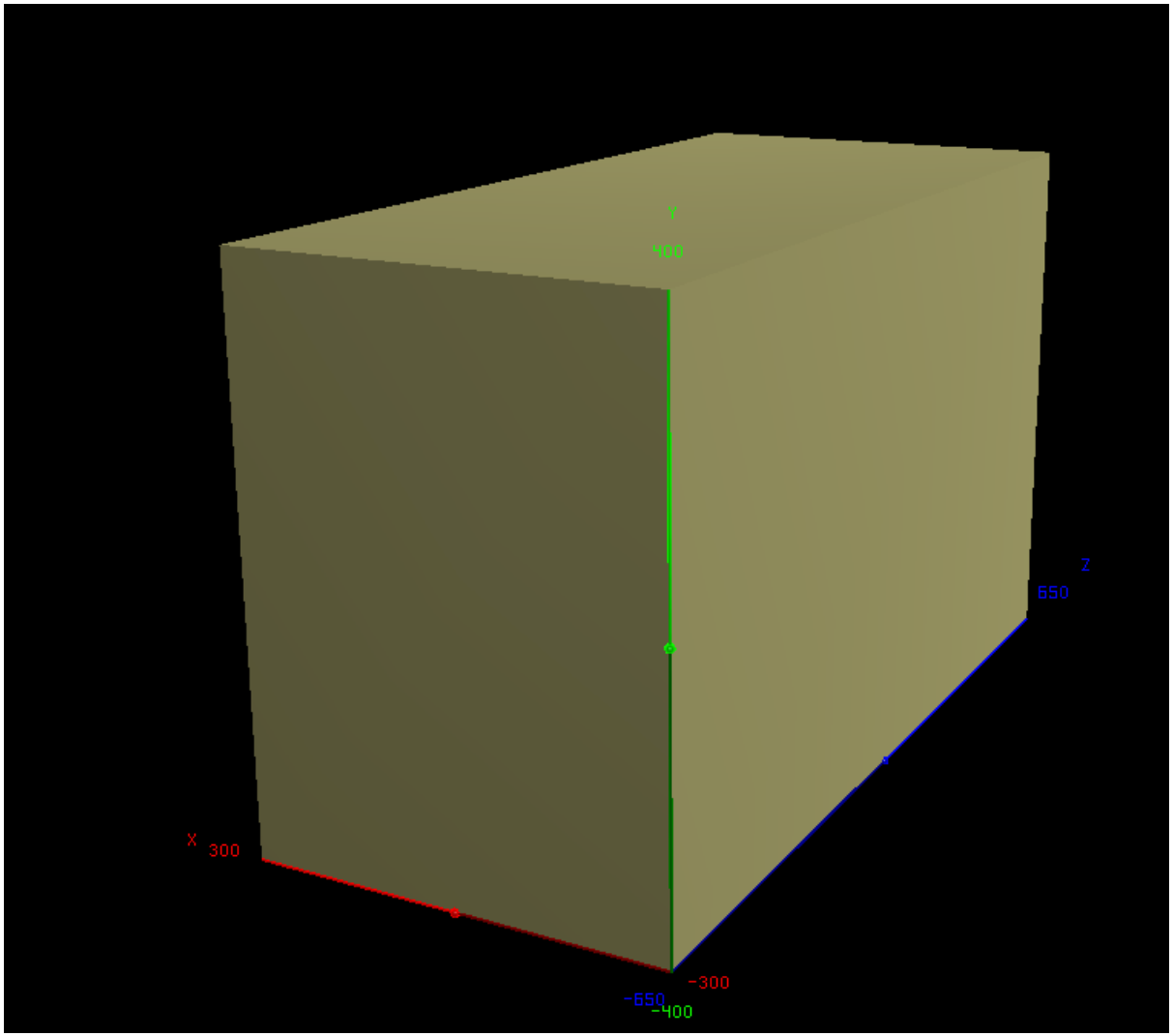
LBNE Geometry

- Debugged with Geant4 and GENIE
- Does not work with wiresim and drift electrons (no realistic wire planes yet)
- Simple geometry: 20m rock basin, concrete and steel layers of membrane, and liquid argon

LBNE Geometry



LAr1 Geometry

- Now available (very simple)
- Even simpler geometry: steel shell and liquid argon

LAr1 Geometry